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**Remarks**

The Office Action does not comment on the Traversal of the Restriction Requirement filed July 18 in response to the Restriction Requirement issued June 21, 2006. Applicant respectfully requests consideration of its arguments, for which this Office Action provides no reply or determination.

This filing is responsive to the Office Action dated 8/30/06. Reexamination and reconsideration of claims 20-27 and 30-32 is respectfully requested.

In rejecting claim 22, the Office Action asserts that "frequency does not change." The Office Action is correct when it says that the frequency does not change, in the reference. Yet a changing frequency is part of the claims. Since the frequency can and does change in the system on which the claims operate, the claims describe figuring out what the current operating frequency is and making decisions based on the current operating frequency. The reference never figures out the frequency because as the Office Action correctly points out, the "frequency does not change." Since the frequency does not change, the reference can not be used to anticipate claims that determine an operating frequency in a frequency scaleable processor and that make decisions based on that operating frequency.

**Summary of The Office Action**

The disclosure is objected to because of the following purported informality: that there is no Brief Summary of the Invention. No Brief Summary is required and thus none is provided. This objection should be removed as being improper. If the Office Action persists in this objection, a citation to some authority requiring a Brief Summary is invited.

The Applicant points out the MPEP §601.01 controls application filing:

(b) *Application filing requirements - Nonprovisional application.* The filing date of an application for patent filed under this section, except for a provisional application under paragraph (c) of this section or a continued prosecution application under paragraph (d) of this section, is the date on which a specification as prescribed by 35 U.S.C. 112 containing a description pursuant to §1.71 and at least one claim pursuant to §1.75, and

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any drawing required by §1.81 are filed in the Patent and Trademark Office.

Neither of sections 1.71 or 1.75 require a Brief Summary of the Invention.

Furthermore, MPEP 608.01(d) "Brief Summary of Invention" states that the summary is optional: "Such summary should, when set forth, be commensurate with the invention as claimed and any object recited should be that of the invention as claimed." (emphasis added) It should be noted that the MPEP uses the term "should" and does not use "must" or "is required."

MPEP 608.01(a) Arrangement of Application, states "(a) The elements of the application, if applicable, should appear in the following order..." (emphasis added). At best, the MPEP prefers a Summary but it is not required.

Indeed, no authority requires a Brief Summary. In the absence of a citation to any controlling authority requiring a Brief Summary, none will be provided. This objection should be withdrawn.

Claim 30 is rejected under 35 USC §101 because the claimed invention is directed to non-statutory subject matter. This rejection appears based on the Interim Guidelines of 2005, some of which have recently been added to the MPEP. Arguments concerning these guidelines are presented.

Claims 20-27, and 31-32 were rejected under 35 U.S.C. §102(b) as being anticipated by 6,173,408, Jimbo et al.(Jimbo) Jimbo merely describes a table that includes entries with three attributes: an instruction name, a number of cycles to execute the instruction, and a predicted power consumption for the instruction. This table, and the rest of the reference are silent concerning taking actions based on an operating frequency of a frequency-scalable processor as claimed.

#### Jimbo

Jimbo describes a processor having a data dependent clock gating function. (C1, 14-5) In Jimbo, the operation of an operation unit is monitored by an operation controller and the

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supply of a clock signal to the operation unit is allowed only while the operation unit is actually operating. (C1, l 43-46) The clock signal appears to have a constant frequency and at no time is that frequency determined (e.g., examined, analyzed). So, Jimbo describes neither a frequency scaleable processor nor determining a current operating frequency for a frequency scaleable processor.

In Jimbo, the time required for the operation unit to perform operation processing is dependent on data. (C1, l 66 – C2, l 1). Clearly, the time to perform depends on data, not on the operating frequency of the clock.

Figure 7 and col. 5, l 4-25 describe the clock controller 400. At no point is the clock described as being frequency scaleable. It follows, therefore, that at no point in Jimbo is the clock frequency examined.

The Office Action asserts that Figure 17 and C7, l 22 – C8, l 8 disclose determining the operating frequency of a frequency scalable processor, examining power data associated with a process, and selectively scheduling a process based on the frequency and power data. However, Figure 17 merely shows a table with three columns, one for an instruction identifier, one for storing the number of processor cycles in which an instruction will execute, and one for predicting the power the instruction will consume. The Office Action asserts that knowing the number of cycles an instruction will consume inherently teaches determining the operating frequency of a frequency scaleable processor. This is incorrect. An instruction that will require ten cycles to complete will require those ten cycles regardless of whether the processor on which the instruction executes is operating at 1 Hz, 1 KHz, 1 MHz, or 1 GHz. Even knowing that the instruction started and completed provides only knowledge that *x* processor cycles occurred, not the frequency at which those *x* cycle occurred. Applicant invites an explanation as to how frequency can be determined from the table in Figure 17.

Additionally, a line by line analysis of the citation reveals no mention of scheduling any process based on an operating frequency. Applicant has provided a table with each sentence from the cited portion of the reference so that the Office Action can point out with particularity which part of the cited portion teaches “selectively scheduling the process for processing by the processor based, at least in part, on the operating frequency of the processor”, as claimed in independent claims 20 and 32.

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| Sentence   | Operating Frequency Determined? | Operating Frequency Used To Schedule? |
|--|---------------------------------|---------------------------------------|
| ... and a power consumption table 508.   | no                              | no                                    |
| On receiving INIT from the outside, the instruction sequencer 504 starts to operate and supplies an address control signal ACONT to the address generator 505,   | no                              | no                                    |
| a fetch control signal FCONT to the instruction register 502,  | no                              | no                                    |
| a decode control signal DCONT to the instruction decoder 503   | no                              | no                                    |
| and a count control signal CCONT to the counter 506, respectively.   | no                              | no                                    |
| The instruction memory 501 transmits an instruction, associated with an instruction address IADRS supplied from the address generator 505, to the instruction register 502.  | no                              | no                                    |
| The instruction register 502 takes in the instruction pre-fetched from the instruction memory 501 only when it is allowed by FCONT.  | no                              | no                                    |
| The instruction decoder 503 decodes the instruction output from the instruction register 502 only when it is allowed by DCONT.   | no                              | no                                    |
| The result of decoding (including information indicating what type of operation processing the instruction requires, and information indicating in which circuit block the operating processing should be performed) is transmitted to the instruction sequencer 504 and the instruction execution controller 507. | no                              | no                                    |

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|  |    |    |
|--|----|----|
| If the decoded instruction requires the performance of operation processing in the first circuit block 101, then the instruction decoder 503 generates INITC1 on condition that BUSY1 has been negated.                | no | no |
| If the decoded instruction requires the performance of operation processing in the second circuit block 201, then the instruction decoder 503 generates INTC2 on the condition that BUSY2 has been negated.            | no | no |
| And if the decode instruction requires the performance of operation processing in the third circuit block 301, then the instruction decoder 503 generates INITC3 on condition that BUSY3 has been negated.             | no | no |
| If the decoded instruction requires the performance of operation processing in the first circuit block 101, then the instruction sequencer 504 generates INIT1 and PRMTR1 on condition that BUSY1 has been negated.    | no | no |
| If the decoded instruction requires the performance of operation processing in the second circuit block 201, then the instruction sequencer 504 generates INIT2 and PRMTR2 on condition that BUSY2 has been negated.   | no | no |
| And if the decoded instruction requires the performance of operation processing in the third circuit block 301, then the instruction sequencer 504 generates INIT3 and PRMTR3 on condition that BUSY3 has been negated | no | no |
| The counter 506 supplies a counter value COUNT, indicating what instruction should be pre-fetched  | no | no |

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|   |    |    |
|---|----|----|
| next time, to the instruction sequencer 504.  |    |    |
| BUSY1, BUSY2, and BUSY3 are also supplied to the instruction execution controller 507.  | no | no |
| On receiving LPWR from the outside, the instruction execution controller 507 starts to operate and predicts power consumption by reference to the power consumption table 508.  | no | no |
| If the predicted power consumption exceeds the maximum power consumption designated by LPWR, then a hold signal HOLD supplied from the instruction execution controller 507 to the instruction sequencer 504 is asserted. | no | no |

It appears that the Office Action has relied on an irrelevant reference. Jimbo concerns a processor that reduces power by only supplying a clock signal having a constant frequency to operation units that are actually operating. (C9, l 55-65). This is not frequency scaling, but rather is data dependent clock gating. In the data dependent clock gating described in Jimbo, the operating frequency is irrelevant to power consumption or scheduling. In the system described in the application, power consumption depends on clock frequency, and thus the operating frequency is examined and scheduling decisions are made based on the operating frequency. No similar examination and conditional control occurs in Jimbo.

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### 35 U.S.C. §101

Claim 30 was rejected under 35 U.S.C. §101 as purportedly being directed to non-statutory subject matter. The Office Action recites that "a computer-readable medium" that may take the form of "a transmission medium" is non-statutory subject matter. While this type of 35 U.S.C. §101 rejection may have been valid before *In re Beauregard*, 53 F. 2d 1583, 35 USPQ 2d 1382 (Fed. Cir. 1995), and before *in re Lowry*, 32 F. 3d 1579, 32 USPQ 2d 1031 (Fed. Cir. 1994) it is clearly out of place and improper now. The teachings of these cases and the PTO response to the teachings were initially provided to examiners and practitioners alike in the 1996 guidelines for examining computer related inventions. The guidelines were then supplemented in November 2005 with the Interim Guidelines (see below). Some of these highly criticized guidelines have been incorporated into the MPEP. However, the MPEP provides guidance for how to examine computer-readable medium claims. The MPEP distinguishes proper 35 U.S.C. §101 rejections for claims to forms of energy from improper 35 U.S.C. §101 rejections for claims to signals functioning as a computer-readable medium. Case law holds that:

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, *per se*, and as such are non-statutory natural phenomena. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112-14 (1853). **However, a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature.** See *O'Reilly*, 56 U.S. at 114-19; *In re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980). (emphases added)

The 1996 guidelines were supplemented with the 1996 PTO training materials related to examining computer related inventions. These training materials discuss, with approval, this claim in US patent 5,568,202 (Koo).

An electronic reference signal in a system for minimizing the effects of ghosts occurring during the transmission and reception of a television signal over a communications path, **wherein said reference signal is embodied in a processor readable memory**, is non-cyclic, has a substantially flat frequency response within the bandwidth of said communications path and has a plurality of substantially uniform amplitude peaks over a time interval, and wherein a replica of said reference signal is transmitted as part of said television signal and is utilized by a decoder to derive coefficients which are used with at least one filter to remove said ghosts.

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Thus, since at least 1996, this type of claim has been regarded favorably by the PTO and has been deemed to be statutory subject matter. The PTO is simply following the law as established by the Federal Circuit in *Beauregard* and *Lowry*. *Beauregard* and *Lowry* established that data structures and computer programs stored on floppy disks were statutory subject matter. The rationale behind the decisions was that a provider of infringing software should be liable as a direct infringer rather than as a contributory infringer. If the data structure or computer program on the floppy disk was not statutory, then only the user of the software would be a direct infringer. The user could end up as an unwitting infringer while the knowingly infringing provider goes free. Thus, patent owners would be forced to sue unwitting infringers for direct infringement to be able to get to the contributory infringer. If the disk were not an infringing article of manufacture and the disk was provided from outside the United States then the provider might not have even been liable for contributory infringement since they would not have made, used, sold, or imported an infringing article. This is inequitable and thus the Federal Circuit acted, making programs and data structures embodied in computer-readable mediums statutory subject matter.

Since *Beauregard* and *Lowry*, propagated signals have largely replaced floppy disks for software distribution. Thus, the Examination guidelines analogize with approval a propagated signal and a *Beauregard* claim (see 1996 guidelines, claim 13) (See also, *Koo*). The signal claim is directed to a manufactured transient phenomenon, like an electrical, optical, or acoustic signal that is more than just a perturbation. The manufactured transient phenomenon allows the transmission of computer executable instructions in the same way that the floppy disk of *Beauregard* and *Lowry* allow the transmission of computer executable instructions. Therefore, the claims are statutory subject matter, as determined by case law and PTO guidelines, and the 35 U.S.C. §101 rejection should be removed.

The Office Action appears to rely on the Interim Guidelines as authority for the position that a transmission medium (e.g., carrier wave) is not statutory subject matter. Contrary to the Office Action assertion, the Interim Guidelines as controlled by Federal Circuit case law reveal that functional matter embodied on floppy disks, memories and carrier waves (e.g., transmission media) is statutory subject matter. Therefore this rejection is baseless and should be withdrawn since:



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A claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is **thus statutory**. (emphasis added)

In this application the rejected claims concern a computer readable medium. Case law holds that:

A signal claim directed to a practical application of electromagnetic energy is **statutory regardless of its transitory nature**. See *O'Reilly*, 56 U.S. at 114-19; *In re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980). (emphasis added)

In this application the rejected claims concern transmitting processor executable instructions, which is a practical application of electromagnetic energy. Thus, following case law the claims are statutory and this rejection should be withdrawn. Nothing in the Interim Guidelines as incorporated into the MPEP supersedes this settled case law.

The Interim Guidelines specifically addressed signal claims. Annex IV, Computer-Related Nonstatutory Subject Matter includes section (c), titled Electro-Magnetic Signals. This section reads, in pertinent parts:

It does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in Sec. 101. ... A claimed signal has no physical structure, **does not itself perform any useful, concrete and tangible result** and, thus, does not fit within the definition of a machine. (emphasis added).

However, this reasoning is flawed and thus has come under intense scrutiny and criticism. The claimed signals do perform a useful, concrete (reproducible), and tangible (detectable, physical) result. The claimed signals carry computer executable instructions from one point (e.g., local computer) to another point (e.g., remote computer) in a repeatable, detectable, and useful manner. When received, the claimed signals transform the receiving machine into a newly programmed machine. Thus, all prongs of the "practical utility" test are met, making the claimed signals statutory subject matter.

The Interim Guidelines recognize that the issue is not closed:

[F]rom a technological standpoint, a **signal encoded with functional descriptive material is similar to a computer-readable memory encoded with functional descriptive material**, in that they both

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create a functional interrelationship with a computer. In other words, a computer is able to execute the encoded functions, regardless of whether the format is a disk or a signal. (emphasis added).

Thus, even the Interim Guidelines recognize that these new §101 rejections are questionable. Since the rejections are questionable, the Examiner is invited to apply the "practical result" test identified in the Interim Guidelines to the claims in question. Since a practical result is unquestioned, the Examiner is encouraged to remove the rejections.

The Interim Guidelines recognize that they are not law and thus conclude by stating:

These interim guidelines propose that such signal claims are ineligible for patent protection because they do not fall within any of the four statutory classes of Sec. 101. **Public comment is sought for further evaluation of this question.** (emphasis added)

Even though the guidelines "propose" that the signal claims are ineligible for patent protection, they do not require that these claims be rejected. Indeed, the Interim Guidelines seek public comment, indicating that this is an open issue. The Interim Guidelines also caution the Examiner not to strictly apply the "article of manufacture" test. For example, Section IV, subsection A, instructs the Examiner that:

Congress chose the expansive language of 35 U.S.C. Sec. 101 so as to include "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-09, 206 USPQ 193, 197 (1980). ... [Thus], the question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to ... but rather on the essential characteristics of the subject matter, in particular, its practical utility.

In this application, the practical utility, (e.g., transmitting computer executable instructions from place to place) is undisputed. What is disputed, is the propriety of the §101 rejections. Thus, Applicant respectfully requests that the §101 rejections be withdrawn so that meaningful prosecution on the merits can proceed.

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**The Claims Patentably Distinguish Over the References of Record**

**35 U.S.C. §102**

For a 35 U.S.C. §102 reference to anticipate a claim, the reference must teach every element of the claim. Section 2133 of the MPEP recites:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

As described above, Jimbo does not describe determining an operating frequency of a frequency scaleable processor, ... and selectively scheduling ... based ... on the operating frequency of the processor. For at least this reason the claims are not anticipated and are in condition for allowance.

Claims will now be discussed individually.

**Independent Claim 20**

Claim 20 is directed to a method that includes determining an operating frequency of a frequency scaleable processor, ... and selectively scheduling ... based ... on the operating frequency of the processor. The reference discloses neither determining the operating frequency nor making a decision based on the missing determination. Figure 17 merely shows how many cycles an instruction will consume. It says nothing about the frequency at which the processor that will consume those cycles is running. Figure 17 would be the same if a processor was running at 1 Hz, 1 KHz, 1 MHz, or 1 GHz. As illustrated above, column 7, line 23 through column 8, line 8 does not teach selectively scheduling a process. To the extent that these lines teach anything similar to scheduling, they teach selectively providing or not providing a constant frequency clock cycle to an operation unit. Indeed, Jimbo only teaches issuing a hold on a clock signal (C8, 15) based on a predicted power consumption. Clearly this does not teach scheduling a process. To the extent that anything is scheduled in Jimbo, it is not scheduled based on the operating frequency of a frequency scaleable processor.

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Since claim 20 recites features not taught or suggested by the reference, claim 20 patentably distinguishes over the reference. Accordingly, dependent claims 21-27 also patentably distinguish over the reference and are in condition for allowance.

#### Dependent Claims 21-27

Claims 21-27 were rejected under 35 U.S.C. §102(b) as being unpatentable over Jimbo. As claims 21-27 depend from claim 20, the arguments above apply equally to these claims. Accordingly, dependent claims 21-27 distinguish over Jimbo and are in condition for allowance.

#### Claim 21

Claim 21 also recites that the power data describes an event(s) associated with the processor processing the process. The Office Action asserts figure 17 teaches this. There are no events listed in figure 17, there are only an instruction name, a number of clock cycles, and a predicted power consumption. For this additional reason this claim is not anticipated and is in condition for allowance.

#### Claim 22

In rejecting claim 22, the Office Action asserts that **"frequency does not change."** The Office Action is therefore internally inconsistent because it asserts figure 17 says something about a frequency scaleable processor. However, the Office Action is correct when it says that the frequency does not change, in the reference. Yet processing associated with a changing frequency is part of the claims. Since the frequency can and does change, the claims describe figuring out what the current operating frequency is and making decisions based on the current operating frequency. The reference never figures out the frequency because as the Office Action correctly points out, the **"frequency does not change."** Since the frequency does not change, the reference can not be used to anticipate claims that determine an operating frequency in a frequency scaleable processor.

Claim 22 also recites a set of events that may associated with the processor processing the process. Since the reference says nothing about even one event, it follows that the reference does not further characterize the missing events. Once again the Office Action asserts figure 17 teaches the set of events. However, there are still no events listed in figure 17, there are only an

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instruction name, a number of clock cycles, and a predicted power consumption. For this additional reason this claim is not anticipated and is in condition for allowance.

#### Claim 23

Claim 23 also recites that scheduling the process includes generating a signal(s) that cause the processor to process the process. Jimbo only describes generating signals that control whether a clock signal is provided or not provided. Also, to the extent Jimbo controls the location of any executable, Jimbo is restricted to controlling the location of a single instruction, which can not be interpreted as a process. For this additional reason this claim is not anticipated and is in condition for allowance.

#### Claim 24

Claim 24 also recites that scheduling the process includes generating a signal(s) that causes the processor to logically locate a process at a selected location. Jimbo only describes generating signals that control whether a clock signal is provided or not provided. Also, to the extent Jimbo controls the location of any executable, Jimbo is restricted to controlling the location of a single instruction, which can not be interpreted as a process. For this additional reason this claim is not anticipated and is in condition for allowance.

#### Claim 25

Claim 25 also recites that scheduling the process includes storing a value(s) in a data structure that is organized by process schedule order. To the extent Jimbo controls the location of anything, Jimbo is restricted to controlling the location of a single instruction, which can not be interpreted as a process. Also, the instruction is not stored in a data store organized by process schedule order, as Jimbo describes taking items in turn. For this additional reason this claim is not anticipated and is in condition for allowance.

#### Claim 26

Claim 26 also recites examining a processor data associated with a frequency scaleable processor. As recited in claim 22, the frequency does not change and thus Jimbo does not anticipate anything related to a frequency scaleable processor. In particular, Jimbo does not

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anticipate claim 26, which also recites "selectively scheduling ... based ... on the processor data, the operating frequency of the processor...." For this additional reason this claim is not anticipated and is in condition for allowance.

**Independent Claim 30**

Like claim 20, claim 30 examines an operating frequency of a frequency scaleable processor. As has been conclusively demonstrated, both through rigorous examination of the reference, and through the Examiner's own words (e.g., the frequency does not change), Jimbo does not describe determining the operating frequency of any processor, let alone the operating frequency of a frequency scaleable processor. For at least this reason claim 30 is not anticipated and is in condition for allowance.

**Independent Claim 31**

Like claim 20, claim 31 includes "determining an operating frequency of a frequency scaleable processor". As has been conclusively demonstrated, both through rigorous examination of the reference, and through the Examiner's own words (e.g., the frequency does not change), Jimbo does not describe determining the operating frequency of any processor, let alone the operating frequency of a frequency scaleable processor.


Additionally, claim 31 recites "determining a change in the operating frequency" and making a decision based on both the operating frequency and the change in the operating frequency. Since the reference does not even determine one operating frequency, it follows that it also does not determine any change in operating frequency. For at least this reason claim 31 is not anticipated and is in condition for allowance.

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For the reasons set forth above, claims 20-27 and 30-32 patentably and unobviously distinguish over the references and are in condition for allowance. An early allowance of all claims is earnestly solicited.

Respectfully submitted,

  
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